NOTES ON THE VEGETATION, FLORA AND BIRDS OF EDITHANA POOL, GASCOYNE DISTRICT, WESTERN AUSTRALIA

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INTRODUCTION

Edithana Pool is on the Lyons River approximately 300 km ENE of Carnarvon (24° 06' 55"S, 116° 28' 45"E) (Figure 1). The pool is on Gifford Creek Station and accessible by a 2WD track from Bangemall Inn on the Gascoyne Junction - Mt Augustus Road.

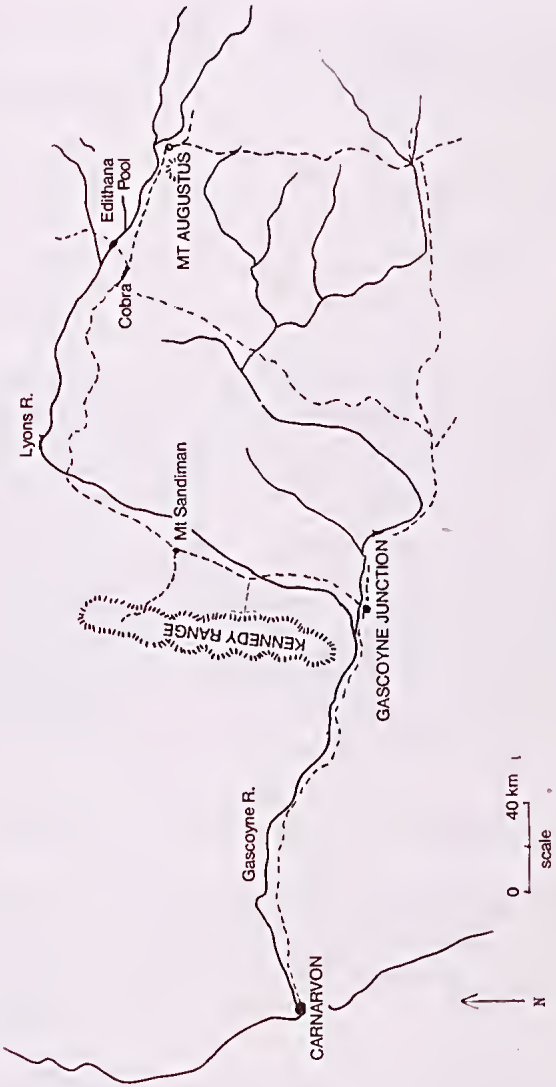

Figure 1: Location of Edithana Pool.

(*deceased June 1988)

The permanent freshwater pool is linear and about 2 km in length. Although the station has run stock since about 1900, vegetation peripheral to the pool does not appear to have suffered undue degradation. The pool is a moderately-used tourist location with day visitors. Activities include sightseeing, swimming and bird-watching.

The flora and avifauna of the pool have not been previously documented. A day was spent recording data on 23 August 1987. The area recorded was restricted to the pool and its peripheral vegetation. This area was divided into two sections for recording (Figure 2).

Section one consisted of the pool 20-35 m wide, at least 2 m deep, with a 10-20 m strip of vegetation along the banks. In section two, the pool was up to 15 m wide, less than 1 m deep, and vegetation 50-60 m wide.

Figure 2: Vegetation of Edithana Pool (not to scale).

PHYSICAL ENVIRONMENT

No climatic data have been recorded at Edithana Pool. Data presented below from the nearest recording stations are temperature (Gascoyne Junction) and rainfall (Mt Augustus Station). According to the classification of Köppen, the climate of Edithana Pool is BWh (hot arid desert) (Dick 1975). Winters are warm and summers hot (Table 1).

The average annual rainfall of 231 mm (Table 2) does not reflect fully the pattern and erratic nature of falls. Useful falls for the vegetation are mainly from cyclones during January to May, that have often degenerated into rain bearing depressions. Highest annual rainfall was 590 mm in 1909 and the lowest 44 mm in 1950. Seven out of 69 years have had annual totals less than 100 mm. Nine times monthly totals have exceeded 200 mm, and 34 times more than 100 mm (all January to August). Monthly and annual totals for the period 1902-1984 will be presented in Newbey & Hopper (in prep.).

Cyclones frequently cause physical damage to the vegetation.

The geology of the general area has been described and mapped at the scale of 1:250,000 (Williams *et al.* 1983). In the vicinity of Edithana Pool, the Lyons River traverses a broad and almost flat plain of colluvial and alluvial origin. The river is cut into the plain with a river terrace about 2 m below plain level. Water level in the steep-sided pool was about 1.5 m below terrace level.

Soils of the river terrace and pool bank are red loams with low sand content. A calcrete pan was noted in small erosion gullies and where the top soil had been removed by sheet erosion.

Table 1

Monthly maximum and minimum temperatures (°C) recorded at Gascoyne Junction (18 years)

	J	F	M	A	M	J	J	A	S	O	N	D
Av. maximum	40.6	39.6	37.5	32.5	27.4	23.5	22.6	24.3	28.1	31.9	35.0	38.4
Av. minimum	23.4	23.7	22.2	17.8	13.2	10.0	9.0	9.6	11.4	14.8	17.5	20.7
Highest	47.0	47.3	46.1	44.2	37.2	30.6	31.0	32.0	35.6	40.8	44.4	45.8
Lowest	16.7	15.6	13.4	8.3	3.9	2.5	1.4	1.3	4.4	6.1	8.9	14.0

Table 2

Average rainfall (mm) and number of raindays at Mt Augustus (69 years)

	J	F	M	A	M	J	J	A	S	O	N	D	Year
Av. rainfall	36	47	33	17	26	28	16	10	3	2	5	8	231
Av. raindays	3	4	3	2	3	3	2	1	0	0	1	1	23

VEGETATION AND FLORA

The vegetation has been described and mapped at the scale of 1:1,000,000 (Beard 1975). Edithana Pool is within the Ashburton Botanical District and the pool vegetation described as *Eucalyptus camaldulensis* (River Gum).

Plant species recorded at Edithana Pool are listed in Appendix I, together with life form and a subjective assessment of frequency and cover/abundance. Section one vegetation consists mainly of *E. camaldulensis* trees 8-12 m high and 20% canopy cover (Muir 1977), over dense tall shrubs of *Myoporum acuminatum*, with fewer *Acacia ampliceps* and *Melaleuca glomerata*. Small shrubs are less common with the main species being *Samolus repens*. Annuals are numerous with *Pluchea rubelliflora* being the most common. On the banks, growing mainly in the water, are dense stands of the sedge *Schoenoplectus litoralis* var. *subulatus*. In pool water with depth of 40-80 cm are patches of the aquatic *Potamogeton tricarinatum*.

Section two is similar to section one but the strip of vegetation is up to 60 m wide. Main differences are that *Myoporum acuminatum* is not so dominant in the tall shrub stratum, with *Acacia ampliceps, A. citrinoviridis, A. sclerosperma* and *Melaleuca glomerata* being more common. The main low shrub *Samolus repens* is replaced by *S. junceus*. The main annuals are *Anagallis arvensis, Euphorbia australis, Heliotropium curassavicum* and *Lepidium africanum*.

The vegetation structure and species composition is similar to that found along rivers and major tributaries in the southern Pilbara (K. Newbey unpub. data). One important aspect was the absence of Buffel Grass (*Cenchrus ciliaris*). This species dominates along many sections of river vegetation.

Floristically, Edithana Pool is within the Austin Botanical District of the Eremaean Botanical Province (Beard 1980). Recorded in the pool vegetation were 61 species and 1 variety of flowering plant; five of the species were introduced. No gazetted rare flora were recorded (Anon. 1987). However, two species recorded were of particular interest. *Peplidium* sp. (KRN 11678) has been rarely collected (W. Barker pers. comm.). This is the same taxon as referred to as *Peplidium* sp. E in Barker (1982). A small patch, less than one metre across, was growing on a small seepage area about 1.5 m above river level.

The other taxon (KRN 11820) belongs to the family Asteraceae and is difficult to identify to genus level — possibly closest to *Craspedia* (P. Short pers. comm.). Only one or two plants were recorded but the area was not thoroughly searched.

BIRDS

Forty one species were recorded during the day and are listed in Table 3. Most are at least moderately common in the Gascoyne District (Storr 1985), only Hardhead and Peregrine Falcon being described as scarce. The search for birds was not exhaustive. It is certain that more species were present.

Table 3 —
BIRDS OF EDITHANA POOL
(For explanation of 'Section' — see vegetation)

Species	Section	Numbers	Comments
EMU *Dromaius novaehollandiae*	2	1	Both with stripey chicks (1, 5).
AUSTRALASIAN GREBE *Tachybaptus novaehollandiae*	2	2	
DARTER *Anhinga melanogaster*	1	1	
LITTLE BLACK CORMORANT *Phalacrocorax sulcirostris*	1	12	
GREAT EGRET *Egretta alba*	2	1	Fishing.
STRAW-NECKED IBIS *Threskiornis spinicollis*	1	3	Perched in River Gum.
BLACK SWAN *Cygnus atratus*	2	1	With 5 half-grown cygnets.
PACIFIC BLACK DUCK *Anas superciliosa*	2	3	
HARDHEAD *Aythya australis*	2	9	
WHISTLING KITE *Haliastur sphenurus*	2	1	Immature. Perched in River Gum.
BROWN GOSHAWK *Accipiter fasciatus*	1	1	Flying and calling.
LITTLE EAGLE *Aquila morphnoides*	1	1	Made unsuccessful footdive into pool.
PEREGRINE FALCON *Falco peregrinus*	1	1	Perched in River Gum.
AUSTRALIAN HOBBY *Falco longipennis*	1	1	Perched in River Gum.
EURASIAN COOT *Fulica atra*	2	8	
BLACK-FRONTED PLOVER *Charadrius melanops*	1, 2	Several, Ones and twos	
PEACEFUL DOVE *Geopelia placida*	1, 2	A few, in twos	
DIAMOND DOVE *Geopelia cuneata*	2	30	On ground near water.
CRESTED PIGEON *Ocyphaps lophotes*	2	Several	
SPINIFEX PIGEON *Petrophassa plumifera*	2	Several, in twos.	
GALAH *Cacatua roseicapilla*	2	2	Probably nesting. At hole in River Gum.
LITTLE CORELLA *Cacatua sanguinea*	1	*ca* 400	
BUDGERIGAR *Melopsiottacus undulatus*	1, 2	Groups of 10-20	
PORT LINCOLN RINGNECK *Barnardius zonarius*	2	Groups of 2-6	
BLUE-WINGED KOOKABURRA *Dacelo leachii*	2	1 heard	
SACRED KINGFISHER *Halcyon sancta*	2	1	
RAINBOW BEE-EATER *Merops ornatus*	2	4	
TREE MARTIN *Hirundo nigricans*	1, 2	Several	
BLACK-FACED CUCKOO SHRIKE *Coracina novaehollandiae*	2	1	

Species	Section	Numbers	Comments
RUFOUS WHISTLER *Pachycephala rufiventris*	1, 2	Several in pairs	
GREY SHRIKETHRUSH *Colluricincla harmonica*	2	Few in ones	
CRESTED BELLBIRD *Oreoica gutteralis*	1	1	
WILLIE WAGTAIL *Rhipidura leucophrys*	2	In ones and twos	
GREY-CROWNED BABBLER *Pomatostomus temporalis*	2	Groups of 4 plus	
CLAMOROUS REED-WARBLER *Acrocephalus stentoreus*	2	In twos	Calling from *Typha* clumps. Feeding on *Cyperus vaginatus*.
SPINY-CHEEKED HONEYEATER *Acanthagenys rufogularis*	2	Few	Heard
YELLOW-THROATED MINER *Manorina flavigula*	1	Several	
WHITE-PLUMED HONEYEATER *Meliphaga penicillatus*	1,2	Many	Probably most common bird. In River Gums.
MISTLETOEBIRD *Dicaeum hirundaceum*	2	1	Heard
AUSTRALIAN MAGPIE-LARK *Grallina cyanoleuca*	1, 2	Several	
TORRESIAN CROW *Corvus orru*	2	2	Nesting. One bird on nest

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Appendix I

FLORA LIST

Families of ferns and flowering plants are listed systemically following the system of the Western Australian Herbarium (PERTH) (Green 1985). Within families, taxa are listed alphabetically. Reference specimens of most taxa are lodged in PERTH, especially taxa which could not be matched with named species. Life forms (LF) follow the scheme of Newbey (1979). If a taxon has more than one life form, then the most common one is listed. The distribution of taxa by landform elements is listed, with a subjective assessment of frequency and cover/abundance. An asterisk (*) indicates a naturalised species.

Section: See text.

Frequency

A = 1 or 2 populations
B = Few populations
C = Scattered populations
D = Frequent populations
E = Common populations

Cover/abundance

1 = 1 or 2 plants
2 = Few plants
3 = Few plants to 1% canopy cover
4 = 1-5% canopy cover
5 = 6-30% canopy cover
6 = 31-70% canopy cover

LF	Taxon	Section 1	Section 2
20	TYPHACEAE		
SC	*Typha domingensis* Pers.		B3
23	POTAMOGETONACEAE		
AQ	*Potamogeton tricarinatus* F. Muell. & A. Bennett ex A. Bennett	E5	C4
31	POACEAE		
AG	*Leptochloa digitata* (R. Br.) Domin	B2	—
32	CYPERACEAE		
SC	*Cyperus vaginatus* R. Br.	E4	E4
SC	*Schoenoplectus litoralis* (Schrader) Palla var. *subulatus* (Vahl) Chiov.	D4	—
103	POLYGONACEAE		
SS	*Muehlenbeckia cunninghamii* (Meissner) F. Muell.	B3	—
AS	**Rumex vesicarius* L.	—	C2
105	CHENOPODIACEAE		
DS	*Atriplex semilunaris* Aellen	—	A2
AS	*Dysphania plantaginella* F. Muell.	—	B2
106	AMARANTHACEAE		
AS	*Amaranthus pallidiflorus* F. Muell.	A1	—
AS	*Ptilotus gomphrenoides* F. Muell. ex Benth.	A1	—
AS	*Ptilotus polystachyus* (Gaudich.) F. Muell.	A1	—
137A	CAPPARACEAE		
MS	*Capparis spinosa* L. var. *nummularia* (DC.) F.M. Bailey	—	A1
138	BRASSICACEAE		
AS	**Coronopus didymus* (L.) Smith	—	A3
AS	**Lepidium africanum* (Burm. f.) DC.	A1	C2
AS	*Lepidium* sp. (KRN 11679)	B3	B3
160	SURIANACEAE		
LS	*Stylobasium spathulatum* Desf.	D3	C2
163	MIMOSACEAE		
TS	*Acacia ampliceps* Maslin	C4	D4
TS	*Acacia citrinoviridis* Tind. & Maslin	—	C3
TS	*Acacia coriacea* DC	B2	B2
TS	*Acacia farnesiana* (L.) Willd.	—	A1
TS	*Acacia pyrifolia* DC.	—	A1
TS	*Acacia sclerosperma* F. Muell.	B1	C2
164	CAESALPINIACEAE		
TS	*Petalostylis labicheoides* R. Br.	—	B1

LF	Taxon	Section 1	Section 2
165	PAPILIONACEAE		
HP	*Glycine canescens* F.J. Herm.	A1	—
LS	*Psoralea pustulata* F. Muell.	A2	—
CL	*Rhynchosia minima* (L.) DC.	A1	—
TS	*Sesbania cannabina* (Retz.) Poiret	—	B1
AS	*Tephrosia* sp. (KRN 11672)	B2	—
173	ZYGOPHYLLACEAE		
AS	*Zygophyllum ovatum* Ewart & J. White	—	B2
185	EUPHORBIACEAE		
MS	*Adriana tomentosa* Gaudich.	—	A1
AS	*Euphorbia australis* Boiss.	B2	C2
DS	*Euphorbia boophthona* C. Gardner	B1	B2
AS	*Euphorbia myrtoides* Boiss.	B1	B1
221	MALVACEAE		
HP	*Malvastrum americanum* (L.) Torrey	B2	B2
273	MYRTACEAE		
ST	*Eucalyptus camaldulensis* Dehnh	E5	E4
TS	*Melaleuca glomerata* F. Muell.	C2	C2
276	HALORAGACEAE		
AS	*Haloragis gossei* F. Muell.	—	B2
281	APIACEAE		
AS	*Daucus glochidiatus* (Labill.) Fischer, C. Meyer and Ave-Lall.	A2	A2
293	PRIMULACEAE		
AS	**Anagallis arvensis* L.	B2	C2
DS	*Samolus junceus* R. Br.	B1	C2
DS	*Samolus repens* (Forster & G. Forster) Pers.	C4	—
307	CONVOLVULACEAE		
CL	*Convolvulus erubescens* Sims	A1	—
310	BORAGINACEAE		
AS	*Heliotropium curassavicum* L.	B2	C2
SS	*Trichodesma zeylanicum* (Burm. f.) R. Br.	A1	—
311	VERBENACEAE		
TS	*Clerodendron lanceolatum* F. Muell.	B2	—
315	SOLANACEAE		
AS	*Nicotiana occidentalis* Wheeler	B2	B2
316	SCROPHULARIACEAE		
AS	*Peplidium* sp. (KRN 11678)	—	A2
AS	*Stemodia viscosa* Roxb.	—	B2
326	MYOPORACEAE		
TS	*Myoporum acuminatum* R. Br.	E5	C3
337	CUCURBITACEAE		
AS	*Mukia maderaspatana* (L.) M. Roemer	A1	A1
341	GOODENIACEAE		
SS	*Scaevola spinescens* R. Br.	A1	—
345	ASTERACEAE		
AS	*Angianthus milnei* Benth.	—	A2
AS	*Calotis hispidula* (F. Muell.) F. Muell.	B2	B2
AS	*Calotis multicaulis* (Turcz.) Druce	—	A2
AS	*Centipeda minima* (L.) A. Braun & Asch.	A1	—
AS	*Flaveria australasica* Hook.	B1	B1
AS	*Helipterum strictum* (Lindley) Benth.	A2	—
AS	*Pluchea rubelliflora* (F. Muell.) Robinson	C2	C2
AS	**Sonchus oleraceus* L.	B1	B1
AS	*Streptoglossa cylindriceps* (J. Black) C.R. Dunlop	B3	B2
AS	*?Craspedia* (KRN 11820)	—	A1
AS	Genus indet. (KRN 11675)	A1	—